

## Remarks

The allowance of claims 16-20 is noted with appreciation.

Claim 2 has been amended to make it clear that the intended polyhydric alcohols do not include partial fatty acid esters. Partial fatty acid esters are not normally considered to be polyhydric alcohols. To the extent that the Examiner has now interpreted partial fatty acid esters as polyhydric alcohols, it is a new argument and new ground of rejection not made necessary by any amendment by the Applicants. The term "polyhydric alcohol" has been in the claims from the time of original filing and until the final rejection the term was not argued by the Examiner as including partial fatty acid esters. The amendment could not have been made earlier since the argument was not raised by the Examiner until the final rejection. In addition, the specific polyols, glycerin and propylene glycol have been in the claims from the time of filing. Therefore, no new issue is raised and no new search is required.

Claim 3 has again been made dependent upon Claim 2 to simplify the interrelationships of the claims and includes no limitations not in the original claims. It is essentially identical to pending Claim 13.

The present invention relates to a food casing comprising an internal surface coating of a **dried aqueous emulsion** comprising at least one polyglyceryl ester and from about 10 to about 20 weight percent of dissolved polyhydric alcohol selected from glycerin and propylene glycol..

The Examiner has rejected Claim 1 as being anticipated by Rose (US 3,834,920).

The rejection has been rendered moot by cancellation of Claim 1.

Claims 2-4, 9, 11, 13, and 15 have been rejected under 35 U.S.C. 103 as being unpatentable over Rose.

Claim 2 requires the presence of from about 10 to about 20 weight percent of a glycerin or propylene glycol polyhydric alcohol in the emulsion. Rose suggests nothing concerning addition of glycerin or propylene glycol in a peeling composition. **Further, the dried emulsion of the invention would contain glycerin or propylene glycol for that purpose, which Rose's compositions would not.** Rose might not be able to add polyhydric alcohol to his compositions even if he were aware of the possibility. Glycerin and propylene glycol are hydrophilic and are incompatible with the at least 40% oil required by Rose.

Claim 2 is therefore clearly patentable over Rose.

Claims 3-4, 9, 11, 13 and 15 are dependent upon Claim 2 and are clearly patentable over Rose for the same reasons that Claim 2 is patentable over Rose. Claims 11 and 13 have been cancelled as being redundant.

Claim 3 further requires triglyceryltetraoleate. Rose suggests triglyceryltetraoleate for nothing and certainly not in a composition that would aid peeling of food casing.

Rose discloses a solution of a surfactant in mineral oil using acetylated fatty monoglyceride as a cosolvent. (Column 3, lines 64-66 and claim 1). Rose does not suggest or desire water in his system. Rose's disclosed solution thus clearly does not employ an aqueous emulsion to obtain his food casing and the coating is clearly not a dried aqueous emulsion. The resulting products are clearly significantly different. There is of course much higher percentage of oil in a solution in oil than in an aqueous emulsion. The percentage of oil in Rose's solution

is at least 40 percent, see e.g. all of Rose's examples including the only examples of Rose containing a polyglycerol ester (7 and 12 in Table 1). Reference may also be made to claim 1 of Rose in which the primary component is mineral oil with up to 30% emulsifier and sufficient acetylated fatty monoglyceride to dissolve the emulsifier in the mineral oil. According to the examples of Rose (see e.g. Table 1), the amount of mineral oil is never less than 40% and the "sufficient proportion" of polyglycerol monooleate or polyglycerol monostearate is not more than half of that, i.e. 20% or less. The balance of the Rose composition is acetylated fatty monoglyceride. By contrast, no oil at all is required by the pending claims. If oil is present at all, it is usually present in an amount of less than about 5 weight percent, see e.g. line 1 on page 3 of the present specification and Claim 7 that requires that oil be less than 5 percent.

Further, entirely different distribution and coating properties are obtained when an aqueous emulsion is distributed, i.e. distribution of the dispersed phase occurs in the form of uniformly dispersed emulsified packets protected and defined by emulsifier molecules. Such packets are usually of a size of between 10 and 1000 Angstrom units ( $1 \times 10^{-9} \text{M}$ ). The largest size of the range is equivalent to one micron. By contrast, when distribution of oil solution droplets occurs, as in Rose, the droplet size cannot be expected to be below 20 microns at the smallest end of the range. This results from the product by process limitations of the present claims. The Examiner is referred to MPEP 2173.05(p). **Product by process claims are clearly proper. The physical results of product by process limitations need not be set out and may not be disregarded.** In order to properly reject a product by process claim, the Examiner must cite prior art that "...discloses a product which reasonably appears to be either identical with or only

slightly different than a product claimed...” See MPEP 2113. **The Examiner has not met this burden.** The Examiner must do more than simply assert that a different process results in the same product. She must cite some art showing that there is at least an expectation of the same resulting products. **This has not been done and therefore the rejection is no more than an unsupported opinion.**

**Coatings applied from aqueous emulsion do not have the same coating properties as coatings applied from oil.** One only need to look at the paint industry where for decades there have been diligent efforts to create an aqueous emulsion system that results in coatings having properties of paints applied from oil. The desired result still has not been accomplished.

The Examiner’s attention is drawn to the two abstracts from “Polymer Online” by John Wiley & Sons, Inc. (1990). These abstracts make it clear that paint coatings from emulsions are not the same as coatings from solution. **Merely because coatings can be made from both emulsion and solution, as asserted by the Examiner, does not mean that the coatings have the same or even similar properties.**

**In view of the above abstracts, the burden is on the Examiner to show that coatings from Rose’s solutions are the same as coatings from the claimed emulsions.** If the Examiner wishes to retain this rejection or a new ground of rejection based upon 35 U.S.C. 103, she must find a reference showing that coatings applied from aqueous emulsion can be expected to have the same properties as a coating applied from oil. Since her assumption is simply not true, she will be unable to do so.

It needs to be further pointed out that Rose only teaches coatings that contain over 40% oil. The present claims permit no more than 5% oil. Oils do not leave the coating when they “dry” at normal temperatures. A coating containing over 40% oil is thus clearly not the same as (and does not suggest) a coating with less than 5% oil. Even when the coating components are calculated after removal of water (dried), Rose still has at least 40% oil in the coating and no glycerin or propylene glycol as required by the present invention. The ratio of oil to glycerin and propylene glycol in the “dried” Rose coating is therefore infinite. By contrast upon drying the dried coating of the present invention, as claimed in Claim 7, will have ratio of oil to glycerin and propylene glycol of from 0:1 to 1:2 (5/10). The dried coatings are not similar in any way.

The Rose reference, therefore, clearly does not disclose or suggest the presently claimed invention.

Claims 1-4 and 9-15 have been rejected under 35 U.S.C. 103 as being unpatentable over U.S. Patent 4,062,981 to Bridgeford in view of U.S. Patent 3,966,632 to Colliopoulos et al.

Claims 1, 11 and 13 have been cancelled.

This rejection is improper both as to the original claims and the claims as amended and should be withdrawn.

**Neither reference suggests improvement in food casing peeling performance with any composition and neither does their combination.**

Bridgeford '981 does not disclose or suggest the use of a polyglyceryl ester for any purpose. None of the compounds cited by the Examiner, as being disclosed by Bridgeford, is a polyglyceryl ester. Sorbitan trioleate is definitely not a polyglyceryl ester. No advantages are

suggested by Bridgeford '981 for using an emulsion of a polyglyceryl ester. There is in fact no suggestion that a polyglyceryl ester would have any utility in the area at all. Bridgeford is not even concerned with peeling but with preventing jamming on a shirring machine. The problems are not the same or even related. Bridgeford therefore clearly does not teach or suggest the present invention.

Colliopoulos et al. similarly is not at all concerned with peeling of food casing and in fact is not concerned with food casing at all. There is no suggestion of incorporating anything into food casing. Colliopoulos is therefore unrelated to Bridgeford '981 which is concerned with jamming of food casing on a shirring machine. There is nothing that Bridgeford '981 and Colliopoulos et al. have in common that could form any reasonable basis for their combination. Since neither of them suggest anything concerning easily peeled food casing, there is certainly no suggestion in either that would permit their combination for that purpose. This combination of references is thus a classic improper hindsight rejection. Even if the references are combined, they still would not suggest the presently claimed food casing coated with an aqueous emulsion of polyglyceryl ester. The Examiner's statement of equivalence of sorbitan trioleate and polyglyceryl ester has no basis, except based upon improper hindsight using the teachings of the present application, and even if the teachings of the present application are considered, no such equivalence can be found. Sorbitan trioleate is not taught by the present application or any of the references as being equivalent to polyglyceryl ester for any purpose and certainly not to obtain improved peeling of food casing. The rejection should be withdrawn.

In view of the foregoing amendments and remarks, it is submitted that all rejections should be withdrawn and that all claims should be allowed, which action is courteously requested.

Respectfully submitted,

A handwritten signature in black ink, appearing to read "Michael L. Dunn", with a large, stylized "D" and a long horizontal flourish extending to the right.

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Dated: February 19, 2002

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**Version with markings to show changes made**

2. (twice amended) A food casing comprising an internal surface coating of a dried aqueous emulsion comprising at least one polyglyceryl ester, and from about 10 to about 20 weight percent of dissolved polyhydric alcohol selected from the group consisting of glycerin and propylene glycol.

3. (thrice amended) [A] The food casing [comprising an] of Claim 2 wherein the internal surface coating of dried aqueous emulsion [comprising at least one polyglyceryl ester which polyglyceryl ester] comprises triglyceryltetraoleate.



9/5/10

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218041032 Text  
Chapter CH=21804  
Type TY=218041  
Unit UN=218041008

Chapter Title: Coatings

Text starts in 218041030  
Text continued from 218041031  
Text continues in 218041033

Section Heading: Uses (continued)

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Text:

Cost is an important factor in exterior house **paints**. Generally speaking, they are designed with low gloss because this permits higher pigment loading, especially with high CPVC **paints**. Inert pigments should be used that give a broad distribution of particle size because this leads to high CPVC, which in turn permits incorporation of greater quantities of low cost inert pigments. Low gloss also reduces dirt pickup, which is a greater problem with **latex paints** than with alkyd **paints** because they remain permanently thermoplastic. Calcium carbonate extenders, however, should be avoided. The **latex paint** film is permeable to water and carbon dioxide. Calcium carbonate can dissolve in the solution of carbonic acid, and the soluble calcium bicarbonate leaches out to the surface of the film. The reaction is reversed when water evaporates, and the calcium bicarbonate decomposes, depositing a "frost" of calcium carbonate on the surface of the film.

Gloss Enamels.

In contrast to exterior paint and flat wall paint, about half of the gloss paints or enamels sold are based on alkyd resins. Professional painters particularly favor the continued use of alkyd gloss paints. The need for reduction of VOC emission levels, especially in California, has led to technology-forcing regulations resulting in major efforts to increase the solids content of alkyd paints or overcome the disadvantages of latex gloss paints.

It is not possible to make latex enamels that have as high a gloss as solution-based coatings. In solution-type coatings, gloss is enhanced during the solvent evaporation by the formation of a thin surface layer that has a lower pigment content than the average PVC of the system. In fact, in many cases, there is a layer of roughly 1  $\mu$ m on the surface of a gloss paint that contains essentially no pigment particles. In latex paints, formation of such an essentially clear surface layer is not possible, and therefore the gloss is lower. The ratio of pigment to binder at the surface of a latex paint can be decreased somewhat by using finer particle size latex. Although the gloss is enhanced in this way, it is still low compared to high gloss alkyd paints. Another factor tending to reduce the gloss of latex paints is the "blooming" of surfactant to the surface of the film. This can be ameliorated by making latices with as low a surfactant concentration as possible, but it can probably never be eliminated. On the other hand, the far superior resistance to photooxidation of the latex polymer as compared to any alkyd leads to superior gloss retention in latex paints. The difference in gloss retention is particularly large in exterior applications, where after approximately one year of exposure, the gloss of the latex paint is higher than the gloss retained by the alkyd paint. Furthermore, the latex paint films are more resistant to cracking, checking, and blistering. As would be expected, the gloss of a latex coating can be considerably improved by including in the formula a "water-soluble" polymer such as an amine salt of a copolymer of acrylic esters, styrene, and a substantial amount of acrylic acid. Such coatings are widely used as floor waxes. When the "wax" coating is dirty, it can be removed by washing with ammonia water. However, in most cases such an approach would not be appropriate for paints. Proprietary resins are on the market that are reported to enhance gloss without sacrificing film properties.

The principal limitation of gloss latex paints is not, however, their gloss. It is rather the difficulty of achieving adequate hiding in one coat. Because in professionally applied painting the cost of the labor is higher than the cost of the paint, alkyd paints, which provide hiding in one coat in many cases, are favored by painting contractors.

There are several factors involved in the difference of hiding between gloss latex and gloss alkyd paints.

The volume solids of latex gloss paints are substantially lower than the volume solids of alkyd gloss paints. For example, the solids of latex paint are around 33% compared to as high as 67% for an alkyd paint. In order to apply the same dry film thickness in this example, twice as much wet film of this latex paint would have to be applied. The problem of applied wet film thickness is further compounded by the fact that the main factor controlling the wet film thickness initially applied is the viscosity of the paint at the high rates of shear experienced during brush application. In order to apply a thicker wet film, latex paint should have a higher viscosity at a high shear rate than is appropriate for an alkyd paint. Actually, for many years, the high shear rate viscosity of commercial gloss latex paints was lower than that of a corresponding alkyd paint. The film thickness applied is also affected by the judgment of the painter as to how much he should brush the paint out to a thinner film. This judgment is affected by the fact that the wet hiding of latex paints is substantially greater than their dry hiding. When the water (refractive index 1.33) evaporates from the film, the latex particles (refractive index approximately 1.5) coalesce. The number of interfaces for scattering light drops and, therefore, hiding decreases. This effect is augmented by the larger difference in refractive index between rutile TiO<sub>2</sub> (refractive index 2.76) and water (the interface in the wet film), as compared to TiO<sub>2</sub> and the latex polymer (the interface in the dry film). This effect is large because a small change in a large refractive index difference makes a larger difference in light scattering than the same change in a pair with a small refractive index difference. Furthermore, in the wet paint the TiO<sub>2</sub> scatters light more efficiently because of the lower volume concentration as compared to the dry film. There is a similar difference in alkyd paints but the effect is not as great because the volume change during drying is much smaller.

9/5/6

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205101007 Text  
Chapter CH=20510  
Type TY=205101  
Unit UN=205101004

Chapter Title: Drying Oils  
Section Heading: Uses

Text:

The largest current industrial use of drying and semidrying oils is as raw materials, either directly or as the fatty acids obtained by saponification, in the manufacture of oxidizing alkyds, epoxy esters, urethane oils, and synthetic drying oils. Tall-oil fatty acids are also used to manufacture dimer acids.

Since drying oils are a so-called renewable resource, they may again become important in **paints** and printing inks depending upon the cost of drying oils **compared** with petroleum-derived raw materials. However, in many cases, the **properties** that can be obtained with synthetic binders, eg, especially retention of flexibility, gloss, and color, are superior to those that can be obtained with a drying oil or drying oil-derived binder.

#### **Paints .**

Although drying oils have been largely displaced by latices and other synthetic resins as **paint** vehicles, oils are still being used in **paint** and allied products. In exterior house **paints**, linseed oil or oxidizing alkyds are used when **paint** is applied below 8-10 DEGREES C, that is, at temperatures at which **latex paint** does not coalesce satisfactorily. They are also used in primers over chalky surfaces where **latex paints** do not provide adequate adhesion. Synthetic drying-oil esters such as those derived from low molecular weight styrene-allyl alcohol copolymers improve the adhesion of **latex paints** to chalky surfaces. On a solids basis, about 15% of the **latex** polymer is replaced by the drying oil in emulsion form. After application, the emulsion breaks, permitting the drying oil to penetrate between the loose pigment particles of the chalky surface where the **latex** cannot penetrate. The oil reaches the continuous substrate of the old **paint**, thus serving to cement the chalky particles together and provide adhesion.

Most stains used for finishing shingles and other natural wood exterior materials are made with pigmented linseed oil diluted with hydrocarbon **solvents** for penetration. The oil penetrates into the porous wood surface, sealing it against water, and the stain gives a desired uniform color. The use of **latex** stains is increasing, but the resulting wood finishes are less transparent and conceal the grain pattern more than oil stains do. Oil stains based on linseed oil are also used in nonprofessional finishing of furniture, since color uniformity is better controlled than with the dye solutions used in the commercial finishing, although transparency is not as good. Most varnish sold for furniture finishing is based on urethane oils rather than oil resin. Linseed oil and tung oil protect wood furniture against staining without leaving an apparent film on the surface.

Red lead-in-oil primers are the primers of choice for corrosion protection of steel when it is not practical to remove the oily rust particles from the surface of the steel. The drying oil and the hydrocarbon solvents dissolve the contaminating oil from the surface of the rust, permitting wetting. The low viscosity and slow drying of the oil permit penetration of the primer vehicle through the rust deposits down to the surface of the steel, thus binding the rust particles together in the film and providing adhesion. Since the adhesion of these primers to steel, especially in the presence of water, and their saponification resistance is inferior to other types of steel primers, such as epoxy-amine systems, red lead-in-oil primers are used only when the steel cannot be thoroughly cleaned.

#### Printing Inks.

The use of drying oils in printing inks has decreased. Some inks based on drying oils are still used for sheet-fed letterpress printing. The principal remaining use, however, is in lithographic printing, particularly sheet-fed lithographic printing. Because of their low surface tension, oil-based lithographic inks do not wet the hydrophilic portions of the plate. Since the viscosity of these inks must be high, bodied linseed oils or esterified maleic modified soybean oils are used. Drying oil modified alkyds are being used increasingly in lithographic inks.

#### Other Uses.

Linseed oil and modified linseed oil have been used to cure concrete and treat surfaces of concrete highways and bridge decks to reduce scaling and spalling. Some linseed oil is used as core oil to bind sand cores in metal casting. Linseed oil is used as a binder in replacement brake linings. Drying oils are also used as binders for hardboard. Epoxidized oils are stabilizing plasticizers for poly(vinyl chloride) and, by reaction with acrylic acid, are used for uv-curable oligomers.